

**CHINAOLA QUERCICOLA REDISCOVERED IN SEVERAL SPECIALIZED
PLANT COMMUNITIES IN THE SOUTHEASTERN UNITED STATES
(HETEROPTERA: MICROPHYSIDAE)**

A. G. WHEELER, JR.

Bureau of Plant Industry, Pennsylvania Department of Agriculture, Harrisburg, Pennsylvania 17110.

Abstract.—Described from a female collected in Florida in 1927, *Chinaola quercicola* Blatchley has been known only from the holotype, which was thought to have been destroyed. That specimen has been found, and populations of this native microphysid have been discovered in South Carolina and Virginia. Its occurrence in specialized community types—granite outcrops, a shale barren, and a pitch pine-scrub oak barren—and its association with lichen-covered branches of red cedar, *Juniperus virginiana*, and scrub oak, *Quercus ilicifolia*, are discussed. Maryland, another new state record, is given on the basis of a specimen from the National Museum of Natural History collection.

Key Words: Insecta, granite outcrops, shale barrens, pitch pine-scrub oak barrens, lichens

Microphysids belong to one of the smallest heteropteran families. Of the 25 to 30 species that have been described (Kerzhner 1964, Slater 1982), none was known from North America when Van Duzee (1917) catalogued the fauna occurring north of Mexico. In the current North American catalog, Henry (1988) lists four species from Canada and the continental United States: *Mallochiola gagates*, described in *Idiotropus* by McAtee and Malloch (1924); *Chinaola quercicola*, described by Blatchley (1928); and the recently detected Palearctic *Loricula pselaphiformis* Curtis (Kelton 1980) and *Myrmedobia exilis* (Fallén) (Kelton 1981). Since the catalog, two Old World species have been added, the Old World *Myrmedobia coleoptrata* (Fallén) from New York (Schwartz 1989), and *Loricula bipunctata* (Perris) from British Columbia (Schwartz et al. 1991).

Habitat preferences of the two native species are unknown, and no more than two North American localities have been recorded for any of these five Microphysidae. *Chinaola quercicola* has been known only

from one specimen taken in Florida in 1927 (Blatchley 1928). The holotype, however, was presumed to have been destroyed in a flood in the insect collection at Purdue University (Schwartz 1989).

I report here the rediscovery of *C. quercicola*—the holotype and also populations from several specialized community types in the Southeast. New state records are given for Maryland, South Carolina, and Virginia. Information on host plants, association with foliose lichens on host branches, and seasonal occurrence is given.

***Chinaola quercicola* Blatchley**

Blatchley (1928) described this species from a female beaten from foliage of water oak [probably *Quercus nigra* L.] at Dunedin, Florida, March 10, 1927. With apparent loss of the holotype, the placement of this monotypic genus in the Microphysidae has been uncertain (Schwartz 1989).

I first found *C. quercicola* while collecting insects at Forty Acre Rock, a well-known granite outcrop in Lancaster County, South Carolina. T. J. Henry was able to identify



Fig. 1. Red cedar (*Juniperus virginiana*) in granite outcrop; inset shows the lichens that characteristically harbor *Chinaola quercicola*.

specimens through comparison with the holotype, which was discovered in the Drake Collection at the National Museum of Natural History, Washington, D.C. (USNM).

Additional collecting at Forty Acre Rock, surveys of other granite outcrops, and collections made in other specialized habitats have produced the following records of *C. quercicola*. All are based on specimens taken by the author except the Maryland record from the USNM collection. Voucher specimens have been deposited at the American Museum of Natural History, New York (AMNH); Cornell University, Ithaca, New York (CUIC); and USNM. Host plant and microhabitat associations are given in the next section.

Distribution.—MARYLAND: *Montgomery Co.*, 4 mi. SW of Ashton, malaise trap, 7 June 1986, G. F. & J. F. Hevel, 1 ♂. SOUTH CAROLINA: *Lancaster Co.*, Forty Acre Rock, nr. Taxahaw, 7 May 1989, 8 ♂, 2 ♀; 19 May 1989, 6 ♂, 19 ♀; 16 Apr. 1990, 1 instar II, 3 III, 1 IV. *York Co.*, granite outcrop, S. edge of Clover, 20 May 1989, 2

♂, 10 instar V. VIRGINIA: *Alleghany Co.*, Rt. 18, 10.6 mi. SW of Covington, 19 May 1990, 1 instar III; *Augusta Co.*, Big Levels, George Washington Natl. For., 12 mi. SW of Waynesboro, 26 Aug. 1990, 1 ♀.

Community types, hosts, and microhabitat.—*Chinaola quercicola* was collected in two granite outcrops in South Carolina (Forty Acre Rock and a smaller flatrock at Clover), a shale barren in Virginia (along Potts Creek, Alleghany Co.), and a pitch pine-scrub oak barren in Virginia (Big Levels). In the granite outcrops and the shale barren, specimens were beaten from branches of red cedar, *Juniperus virginiana* L. Red cedar sometimes is so common in the vicinity of granite outcrops that these communities are called “cedar rocks” (McVaugh 1943). This plant also is present on many shale barrens (e.g. Platt 1951).

The bugs were collected only from branches of old red cedars covered with a foliose lichen (probably *Parmelia* sp.) (Fig. 1), and it is the lichen rather than its host substrate that appears to be the key in lo-

cating a microphysid population. Lichens were particularly numerous on branches of dying red cedars at Forty Acre Rock. McVaugh (1943) observed a high percentage of dead or dying red cedar on southeastern flatrocks because the bare rock habitat is unfavorable for growth. When placed on a lichen-covered piece of red cedar bark in the laboratory, the mainly black adults and dark red nymphs invariably moved to the dark lower surface of the lichen.

At Big Levels (Augusta Co., Virginia), a quartzite plateau barren (elevation about 1000 m) similar to northeastern pitch pine-scrub oak barrens (Wheeler 1991), *C. quercicola* was beaten from branches of scrub oak, *Quercus ilicifolia* Wangenh. Although it was not noted whether the bug was collected from a lichen-covered branch, lichens were present on some scrub oaks at Big Levels.

Seasonal history.—Overwintering appears to take place in the egg stage, a habit typical of the family (Southwood and Leston 1959, Péricart 1972). The presence of second to fourth instars in mid-April suggests that hatching occurs at least by early April in South Carolina. Adults were collected in early May at Forty Acre Rock, the dominance of males in the population suggesting that adults had been present only a short time. Females predominated at this site on 19 May, although the following day mainly fifth instars and two males were observed in another South Carolina population (at Clover). No individuals could be collected at Forty Acre Rock in mid-August, suggesting *C. quercicola* is univoltine like other microphysids that have been studied (Péricart 1972). On the basis of small numbers collected in Virginia, development may be about a month behind that of South Carolina populations.

DISCUSSION

Chinaola quercicola apparently has habits similar to those of other microphysids. In addition to overwintering as eggs and having a univoltine life cycle, it appears closely associated with lichens. In Europe,

species of *Loricula* and *Myrmedobia* are found on lichens, including *Parmelia* spp. (Carayon 1949, Scudder 1956, Southwood and Leston 1959, Péricart 1972). Other Microphysidae also have been observed on old, dry trees (Butler 1923). If *C. quercicola* is typical of the family, it can be expected to prey on various arthropods that live in lichens (see Gerson and Seaward's [1977] review of lichen-invertebrate associations).

Although *C. quercicola* conforms to the habitus—it resembles a tiny anthocorid—and size (about 1.5 mm) of most microphysids, it does not show the sexual dimorphism prevalent in the family (Carayon 1949, Miller 1971). Females of Old World species have shortened, leathery or coleopteroid hemelytra that lack a membrane, and their abdomen is much widened. In some species ocelli are absent in females (Butler 1923, Southwood and Leston 1959, Kerzhner 1964, Kelton 1980). Females of *C. quercicola* are macropterous, not broadly oval, and have ocelli; they do not differ noticeably from males.

Biological rareness obviously is a subjective designation. One might assume a species such as *C. quercicola*, which has been known from one specimen collected more than 60 years ago, is indeed rare. That apparently is not the case. Because of its cryptic habits and small size, it has been overlooked by collectors. Even when lichen-covered branches likely to harbor these bugs are beaten over a tray or shallow net, nymphs and adults are difficult to see among pieces of bark and other debris that is dislodged.

Although abundant but patchily distributed in some granite outcrops and detected in a shale barren and a pitch pine-scrub oak barren, this bug is not restricted to specialized community types. The Maryland collection was made in a residential area. *Chinaola quercicola*, however, may prefer the xeric conditions of granite outcrops and perhaps shale barrens.

If not actually rare, *C. quercicola* should at least be considered uncommon. Surveys for this bug in granite outcrops in Alabama, Georgia, and North Carolina were negative,

even though old, lichen-covered red cedars were numerous. But further collecting, with emphasis on foliose lichens growing on old or dying trees, should produce additional records of this little-known species.

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